

REMARKS

In paragraph 1 of the above-identified Office Action it was required that the drawings be revised to indicate that Figs. 11 and 12 are prior art. Accordingly, submitted herewith is a separate communication wherein a replacement sheet of drawings is submitted to identify those figures as prior art.

Furthermore, in paragraph 2 of the Office Action it was pointed out that reference numeral 66, used in Fig. 9A of the drawings, was not referred to in the Specification. In response, Applicant has amended the Specification to present a new Title as required in paragraph 3 of the Office Action, and to amend Page 19 to refer to numeral 66.

In this regard, it is believed that the drawings and Specification are now in good form.

Referring now to the claims, Applicant notes that the cited Wadsworth patent was relied upon as the principal rejecting reference wherein the claims were deemed to be obvious. In this regard, the cited Tamayama, Miyake, Woolaway, Nam, Noguchi, and Sugiki references were relied upon with Wadsworth in order to reject as obvious Claims 4, 5, 6, 8, 10 and 12, and 11 and 13, respectively. In response to these rejections, Applicant points out that independent Claims 1 and 10 have been amended herein and that those claims are believed to be allowable over the cited references for the reasons given below.

Specifically, independent Claim 1 requires a plurality of charge detection circuits (e.g., FD-Amp and TR in Fig. 2), which relate, respectively, to CCDs (e.g., 2) and detect photoelectric charges therefrom. The apparatus is arranged to control transfer of signals from the charge detection circuits by a plurality of transfer transistors (e.g., Tc₁ and Tc₂) so that each of the plurality of transfer transistors is independently controlled to output

the signals from the charge detection circuits to a common output line (e.g., 5). Accordingly, each charge detection circuit and associated transfer transistor is driven by applying thereto a scanning pulse Φ_{mn} .

This feature of the present invention is not disclosed by the cited Wadsworth patent. Instead, Wadsworth discloses in Fig. 1 that photoelectric charges from photo-diodes 16 are applied to an output line 26 through shift registers 22. However, the shift registers 22 are simultaneously driven using a drive clock generated by a high-speed clock generator 24 to shift the charges to the output line. The cited Wadsworth patent therefore fails to disclose the independent control of each of the shift registers (i.e., switches 22 in Fig. 2) to the output line.


Independent Claim 10 requires an image pickup apparatus including charge detection circuits arranged to include A/D converters (e.g., 49-51 in Fig. 6) which convert signals from the charge detection circuits into digital signals corresponding, respectively, to differences between signal levels supplied by the charge detection circuits and noise (reset) levels of photoelectric conversion units.

This feature of the present invention is not disclosed by the cited Wadsworth and Noguchi patents. As the Examiner states in the Office Action (page 9), the Wadsworth patent fails to teach A/D converters connected to CCD columns. This deficiency of the Wadsworth patent as a rejecting reference is not overcome by the Noguchi patent, however, which merely discloses in Fig. 1 that a sensor part 10 includes A/D converters 14 which simply convert signal charges into digital signals (column 3, lines 27-28). Accordingly, both of the Wadsworth and Noguchi patents fail to disclose that the A/D converters function together with the charge detection circuits as required in amended independent claim 10.

For all of these various reasons it is respectfully submitted that independent Claims 1 and 10, as well as all of the dependent claims are allowable, and the issuance of a formal Notice of Allowance is solicited.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



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